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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,162	08/17/2001	Lothar Mussmann	33766W039	1475

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EXAMINER

STRICKLAND, JONAS N

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/931,162

Applicant(s)

MUSSMANN ET AL.

Examiner

Jonas N. Strickland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-25 is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

1. This Detailed Action is in response to the amendment filed on 3/02/2004. Claims 1-25 are currently pending. Claims 1, 5, and 19 have been amended. Claims 21-25 are newly added claims. The 35 U.S.C. 102(b) rejection of claims 19 and 20 have been withdrawn in view of Applicant's remarks over Cuif (US Patent No. 6,133,194).

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-5, 11, 12, and 15-18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Suda et al. (EP 0778071 A1).

Suda et al. discloses a catalyst for purifying exhaust gases having excellent purifying performance by employing a particle comprising ceria and zirconia which has large oxygen storage capacity and high adsorption and discharge speed (see abstract). Suda et al. continues to disclose wherein the oxygen storage capacity is prepared using a wet-chemical route, drying the precipitate at a temperature not less than 100°C. The element as oxide is precipitated as hydroxide or oxide (p. 6, lines 52-56). Suda et al. also teaches wherein the dried mixture may be further heated in a hydrogen-containing atmosphere at a temperature from 800-1300°C (p. 8, lines 25-57). Suda et al. continues to disclose wherein the mixed oxides may be heated in a range of 350-1200°C for 5 hours (p. 11, lines 45-48). Suda et al. continues to teach wherein the specific surface area is not less than 50 m<sup>2</sup>/g, which reads on being at least 140 m<sup>2</sup>/g (p. 6, lines 20-27). Suda et al. also teaches wherein the support base can be honeycomb-shaped, on which a noble metal is loaded, such as platinum (p. 9, lines 8-20). Suda et al. also teaches a weight ratio between Ce and Zr between 75/25 to 25/75 (p. 15, lines 45-49).

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Since Suda et al. discloses a similar process for producing cerium/zirconium mixed oxides it would have been obvious to one of ordinary skill in the art to expect a loss of ignition of more than 6 wt%. Suda et al. clearly teaches a process for producing an excellent oxygen storage component comprised of cerium and zirconium having a specific surface greater than 50 m<sup>2</sup>/g, which reads on at least 140 m<sup>2</sup>/g.

The Examiner recognizes claims 1-5, 11, 12, and 15-18 as product-by-process claims. The Patent Office bears a lesser burden of proof in making out a case of *prima facie* obviousness for product-by-process claims. Once a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

6. Claims 6-10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (EP 0778071 A1) as applied to claims 1-5, 11, 12, and 15-18 above, and further in view of Hedouin et al. (WO 99/26715) as translated by US Patent 6,475,452 B1.

Applicant claims with respect to claims 6-10 and 13, wherein the oxygen storage material is comprised of 0.5 to 20-wt% of at least one other metal such as yttrium, scandium, lanthanum, and praseodymium. Suda et al. teaches having metal promoters and noble metals, but does not teach the specific promoter metals or the weight percentage of the promoter metal.

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However, Hedouin et al. teaches a composition comprised of a cerium/zirconium mixed oxide, which may be used as an oxygen storage material (col. 3, lines 31-39). Hedouin et al. continues to disclose wherein praseodymium, samarium, neodymium, and gadolinium may be applied to the mixed oxide at a weight ratio between 5 and 30% (col. 2, lines 36-45).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Suda et al. by having an oxygen storage component comprised of 0.5 to 20 wt% of at least one other metal such as yttrium, scandium, lanthanum, and praseodymium based on the teachings of Hedouin et al., which teaches wherein praseodymium, samarium, neodymium, and gadolinium may be applied to an oxygen storage material comprised of a cerium/zirconium mixed oxide at a weight ratio between 5 and 30%. Such modification would have been obvious to one of ordinary skill in the art, because one of ordinary skill in the art, would have expected a process for producing cerium/zirconium mixed oxides as taught by Hedouin et al. to be similarly useful and applicable to a process for producing cerium/zirconium mixed oxides as taught by Suda et al.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (EP 0778071 A1) as applied to claims 1-5, 11, 12, and 15-18 above, and further in view of Cuif et al. (US Patent 6,133,194).

Applicant claims with respect to claim 14, wherein the cerium and zirconium mixed oxide is produced by co-thermohydrolysis.

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Suda et al. teaches wherein it is known to make cerium and zirconium mixed oxides by co-precipitation.

However, Cuif et al. discloses cerium/zirconium mixed oxides, which are prepared precipitation and co-thermohydrolysis (col. 2, lines 31-42).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Suda et al., by preparing cerium/zirconium mixed oxides by co-thermohydrolysis, since Cuif et al. teaches wherein it is known in the art to produce cerium/zirconium mixed oxides by precipitation and co-thermohydrolysis. Such modification would have been obvious to one of ordinary skill in the art, because one of ordinary skill in the art, would have expected a process for preparing cerium/zirconium mixed oxides as taught by Cuif et al., to be similarly useful and applicable to a process for producing cerium/zirconium mixed oxides as taught by Suda et al.

### ***Response to Arguments***

8. Applicant's arguments filed 3/02/2004 have been fully considered but they are not persuasive.

In Applicant's arguments with respect to Suda, Applicant has not addressed the issue concerning the product-by-process claims. The Examiner recognizes claims 1-5, 11, 12, and 15-18 as product-by-process claims. The Patent Office bears a lesser burden of proof in making out a case of *prima facie* obviousness for product-by-process claims. Once a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious

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difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

In regards to Applicant's argument, wherein there is no motivation to combine the teachings of Suda with Hedouin, Hedouin clearly states wherein the cerium/zirconium support exhibits oxygen storage capacity (col. 3, lines 10-39).

***Allowable Subject Matter***

9. Claims 19-25 are allowed.

10. The following is an examiner's statement of reasons for allowance: The instantly claimed invention is allowable over the cited prior art, because the cited prior art fails to disclose an oxygen storage material comprising cerium oxide with at least one other oxide of a component selected from the group consisting of silicon and zirconium, wherein the cerium oxide and the other said oxide are present in the form of a mixed oxide, comprising preparing a hydroxidic precursor of a mixed oxide of cerium and at least one of silicon or zirconium by a wet-chemical process, drying the precursors at a temperature from 80°C to 300°C with the formation of an oxide/hydroxide/carbonate dried mixture, treating the dried mixture under a hydrogen-containing atmosphere at a temperature from 600°C to 900°C for a period of 1 to 10 hours. The instant application also claims wherein the oxygen storage material has a loss on ignition of more than 6 wt% and a specific surface area of more than 140 m<sup>2</sup>/g, which is not taught by the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably



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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonas N. Strickland whose telephone number is 571-272-1359. The examiner can normally be reached on M-TH, 7:30-5:00, off 1st Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

  
**STANLEY S. SILVERMAN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1700**

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonas N. Strickland  
April 15, 2004